

**Patent claims**

1. An apparatus for transporting polymer dispersions, said apparatus being capable of being driven by a drive and particularly comprising impellers (28), it being possible for said impellers both to be surrounded by a housing and to protrude freely into a medium, and a number of vanes (2) being mounted in the region of the hub (1), wherein a number of individual vanes (2) are freely mounted on the shaft hub (1) of an impeller (28), so that pumping spaces (5, 25) on the front side (7) and rear side (8) of the vanes (2) of the impeller (28) are flowed through uniformly.
2. The apparatus for transporting as claimed in claim 1, wherein the exit angle (23) from the impeller (28) lies between 30° and 120°.
3. The apparatus for transporting as claimed in claim 2, wherein the exit angle (23) is preferably 90°.
4. The apparatus for transporting as claimed in claim 1, wherein the entire impeller (28) is provided with a conductive PFA coating.
5. The apparatus for transporting as claimed in claim 1, wherein the vanes (2) bounding the pumping spaces (5, 25) have the same path of curvature on the front side (7) and rear side (8).
6. The apparatus for transporting as claimed in claim 5, wherein the vanes (2) have the same radius of curvature (9, 21) on the front side (7) and rear side (8).
7. The apparatus for transporting as claimed in claim 1, wherein the center line (11) of the vanes (2) on the impeller (28) describe a segment of a circle between the enveloping curve (6) and the center of the hub (1).

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8. The apparatus for transporting as claimed in claim 1, wherein the edges of the vanes (2) of the impeller (28) are of a rounded form.
9. The apparatus for transporting as claimed in claim 1, wherein the ratio of the vane width (4) to the vane thickness (3) is  $> 1$ .
10. The apparatus for transporting as claimed in claim 1, wherein the enveloping curve (6) of the impeller (28) is surrounded by a spiral housing.
11. / An impeller for transporting polymer dispersions, said impeller being driven by a drive and a number of vanes (2) being mounted in the region of the hub (1), wherein a number of individual vanes (2) are freely mounted on the hub (1) of the impeller (28), so that pumping spaces (5, 25) on the front side (7) and rear side (8) of the vanes (2) of the impeller (28) are flowed through uniformly.
12. An impeller for transporting media, said impeller being capable of being driven by a drive and a number of vanes (2), in particular impellers (28), being mounted in the region of the hub (1), it being possible for said impellers both to be surrounded by a housing and to protrude freely into the medium, wherein a number of individual vanes (2) are freely mounted on the hub (1) of an impeller (28), so that pumping spaces (5, 25) on the front side (7) and rear side (8) of the vanes (2) of the impeller (28) are flowed through uniformly.
13. A method of preparing polymer dispersions, in particular shear-sensitive polymer dispersions, in a reactor with an external heat exchanger, with a transporting device which receives a transporting means (28), wherein the polymer dispersion flows through pumping spaces (5, 25) of an impeller (28) of which delivery and suction sides (7,8) are of the same geometry.

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